

Pennsylvania Raptor Migration Summary - Spring 2022

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For the most part, the 2022 Spring count season was wetter and warmer than average, except for below average precipitation in March and cooler than average temperatures in April. Mostly favorable winds occurred the first half of March, but troughs of cold air pushing southward from Canada produced below average temperatures and unfavorable winds late March into April. A brief warm-up at the end of April with southerly winds produced season high flights for late migrating species included a particularly synchronous Broad-winged Hawk flight. However, while some species had above average counts across watchsites, most species had average or below-average counts.

Migration Summary

Six Pennsylvania Spring watchsites counted an above-average 29,506 total hawks in 1349 hours during 228 days of counting between 16 February and 6 June for a rate of 21.7 raptors per hour (Table 1). Spring count hours were similar to the 10-year average of 1378 hours. Total spring raptors were 12% above the average of 26,348 and the number of raptors counted per hour was 13% above the average of 19.3 (Table 1). Twelve of 17 species had below average counts with notably low counts of Northern Harriers (82), 39% below the 10-year average of 135; Cooper's Hawk (103), 40% below the average of 171; and Red-shouldered Hawks (114), 57% below the average of 267 (Table 1). Black Vulture, Osprey, Sharp-shinned Hawk, Northern Goshawk, Red-tailed Hawk, Rough-legged Hawk, American Kestrel, and Merlin also had counts below their 10-year averages (Table 1).

Four species had above average counts, Turkey Vultures (20,447), 24% above the 10-year average of 16,439; Golden Eagles (293), 15% above the average of 254; Peregrine Falcon (19), slightly above the average of 17; and Mississippi Kite (9), 190% above the average of 3 (Table 1). Bald Eagle and Broad-winged Hawk had average counts (Table 1).

Site Highlights

Allegheny Front (Somerset/Bedford) - Allegheny counters recorded 1569 hawks in 335.5 hours on 57 days from 16 February to 8 May, a rate of 4.7 hawks per hour (Table 1). The overall count was 49% above the 10-year average and effort was average. Counts of Bald Eagles and Broad-winged Hawks were 189% and 136% above average, respectively (Table 1). The Bald Eagle total of 90 was a new season high, smashing the old record of 44 set in 2017.

The count of Sharp-shinned Hawks, 135, was the largest in the last 10 years and Golden Eagle count of 105 was the second largest in Allegheny Front's 25-year history. Counts of Osprey, Northern Harriers, and Red-tailed Hawks, all were above average this spring (Table 1).

Season high counts of 33 Red-tailed Hawks and 21 Golden Eagles occurred on 5 March along with a dark morph Rough-legged Hawk, the only Rough-leg recorded at Allegheny Front this spring. Light southeast winds on 16 March produced a record flight of 24 Bald Eagles that included a kettle of 17. The season high count occurred 23 April with 630 raptors tallied, including 18 Ospreys, 3 Northern Harriers, 35 Sharp-shinned Hawks, and 532 Broad-winged Hawks, all season high counts (Table 2).

Delaware Nature Society Kite Watch at Bucktoe Creek Preserve (Chester) - The fifth year for this late spring watch for kites and shorebirds. Bucktoe counters tallied 16 raptors in 194 hours over 21 days from 17 May to 6 June, a rate of 0.1 raptors per hour. A season high five Mississippi Kites was observed on 29 May. A total of nine kites were recorded, six of which were sub-adults. This was the only watchsite in Pennsylvania to record Mississippi Kites this spring.

Hawk Mountain (Berks/Schuylkill) - Hawk Mountain counters recorded 1105 hawks in 251 hours on 43 days from 21 March to 15 May, a rate of 4.3 hawks per hour. The total raptor count was 17% above the 10-year average of 948 and effort was average. Counts of Turkey Vultures (102) and Broad-winged Hawks (680) were 85% and 32% above average, respectively, and the second highest counts recorded in spring at Hawk Mountain (Table 1). Nine species had below average counts; most notable were counts of Northern Harriers, 71% below average, and Cooper's Hawks, 66% below average, the lowest counts recorded for both species in 24 years.

The largest Turkey Vulture flight of the season occurred on 21 March, the first day of the count, when 24 vultures streamed north in two and a half hours. Also tallied the first day was one Bald Eagle, 5 Red-tailed Hawks, and 4 American Kestrels. Accipiter flights peaked on 22 April with 12 Sharp-shinned and 3 Cooper's Hawks recorded. The largest flight of the spring occurred on 24 April with 366 raptors tallied, including season highs of 12 Black Vultures and 336 Broad-winged Hawks (Table 2).

Jack's Mountain (Mifflin) - Jack's Mountain hawkwatchers counted 736

raptors in 45 hours over 10 days from 1 March to 3 May, a rate of 16.5 birds per hour (Table 1). The high-count day was 24 April with 619 raptors, including 36 Turkey Vultures, 29 Ospreys, 18 Sharp-shinned Hawks, 8 Cooper's Hawks, 515 Broad-winged Hawks, 10 Red-tailed Hawks, and 2 Golden Eagles.

Presque Isle (Erie) - Presque Isle counters recorded 23,193 hawks in 152.5 hours in 42 days from 21 February to 31 May, a rate of 93.6 hawks per hour (Table 1). The total count was 7% above the 10-year average of 21,620 and effort was 19% below average. Turkey Vultures were the only species with above average counts; the total of 20,122 was 27% above the 10-year average of 15,858 and the highest count in Presque Isle's 15-year history (Table 1). Ten of 16 species had below average counts. The largest drop was seen in counts of Red-shouldered Hawks; the count of 55 shoulders was 70% below average and the lowest count since 2008. Other notable low counts include Broad-winged Hawk, 60% below average, and Cooper's Hawk, 59% below average (Table 1).

Three Rough-legged Hawks were spotted 17 March along with 947 Turkey Vultures. The largest flight of the season occurred on 31 March with 5324 raptors counted including season highs of 5261 Turkey Vultures and 11 Northern Harriers in just 3.5 hours. Strong south-southwest winds produced a banner flight on 13 April that included 1201 Turkey Vultures, 285 Sharp-shinned Hawks, 109 American Kestrels, a dark morph Rough-legged Hawk, and the first Broad-winged Hawks of the season. Broad-winged Hawk flights peaked 11 days later on 24 April with 496 (Table 2).

Tussey Mountain (Centre) - Tussey Mountain counters tallied 2887 hawks in 371 hours over 55 days from 16 February to 25 April, a rate of 7.8 hawks per hour (Table 1). The total count was 46% above the 10-year average and effort was slightly below average. The Broad-winged Hawk count of 1941 was 126% above average and the second highest count in Tussey's 22 years (Table 1). Counts of Bald Eagles (77) were 18% above the 10-year average. Six species had below average counts with counts of Northern Harrier (12) and Red-shouldered Hawk (24) both 40% below average. The Red-shouldered Hawk count was the lowest ever recorded at Tussey. Other species with below average counts included Turkey Vulture, 27% below average; Osprey, 11% below average; Cooper's Hawk, 21% below average; and Red-tailed Hawk, 36% below average.

Eight days in April had double-digit Golden Eagle flights with a peak of 18 on 11 March. Unfavorable winds during the last week in March and the first and third week in April slowed the flight, but a shift in winds on 23 April produced three days of steady flights. Overall 1680 Broad-winged Hawks were tallied from 23 April to 25 April, with a high of 817 recorded on 24 April, the second highest single day count recorded at Tussey (Table 2). The count ended on 25 April with 356 raptors including 244 Broad-winged Hawks, and season highs of 21 Osprey and 61 Sharp-shinned Hawks.

Conclusions

Overall, the total counts were above average for all watchsites, but those above average counts were driven in most cases by increased counts of two or three species: Turkey Vulture, Bald Eagle, or Broad-winged Hawk. The exception was Allegheny Front which recorded above average counts for Osprey, Sharp-shinned Hawk, and Red-tailed Hawk. Allegheny Front also had average counts for Northern

Harrier and Red-shouldered Hawks, while other watchsites were below average.

Inter-year variation in counts is influenced by several factors, including weather, wind, previous year's counts, and effort. So, a single season with below average counts is not necessarily a cause for concern, rather it is the long-term trends that we should be concerned with. If we control for effort by looking at the number of individuals counted per hour, we find there are five species in Pennsylvania whose counts have decreased over the last 23 years: Osprey, Northern Harrier, Cooper's Hawk, Northern Goshawk, and Red-tailed Hawk. Increasing abundance of Cooper's Hawks and Red-tailed Hawks on Christmas Bird Counts in northeastern states suggest they may have altered their migratory behavior and are wintering at more northerly latitudes. However, the same cannot be said for the other three species. Declines in counts of Osprey may be due in part to a significant increase in the Bald Eagle population, but the cause of decline in counts of Northern Harriers and Northern Goshawks is uncertain. Habitat loss, nest disturbance, climate change, and disease all

may play a part in the decline of harriers and goshawks, but more research is needed to discern the exact causes.

Acknowledgements

Thank you to the site compilers for providing insight and access to their data, particularly Nick Bolgiano and Bob Stewart. Data were downloaded from www.hawkcount.org (accessed June 2022) a site managed by Jason Sodergren, HMANA database manager and the Hawk Migration Association of North America. Regional weather information was gathered from the Northeast Regional Climate Center at Cornell University and the Pennsylvania State Climatologist.

This article is Hawk Mountain Conservation Science Contribution number 373.

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Table 2. Peak count dates for Bald Eagle and Broad-winged Hawk at selected Pennsylvania watch sites.

Site	Bald Eagle		Broad-winged Hawk	
	Peak Count	Date	Peak Count	Date
Allegheny Front	24	3/16	532	4/23
Hawk Mountain*	4	4/17, 4/24	336	4/24
Jacks Mountain	4	3/11	515	4/24
Presque Isle	26	5/25	496	4/24
Tussey Mountain	9	4/25	817	4/24

* Site begins count in April

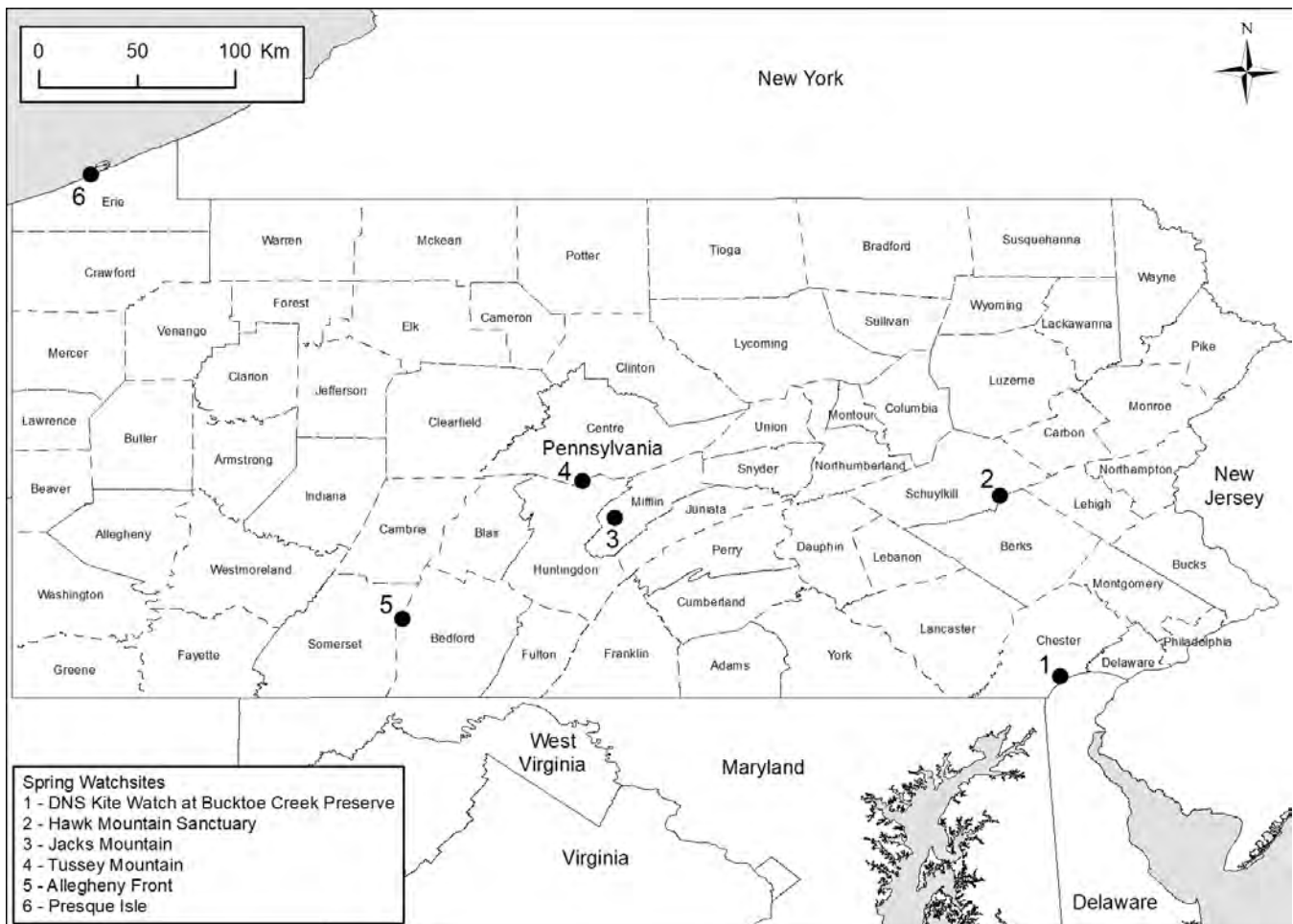


Table 1. Spring 2022 count results for Pennsylvania watchsites.

ALLEGHENY FRONT (Bedford) - Bob Stewart, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
February	7	39.0	0	7	0	2	0	0	0	0	2	0	5	0	2	0	0	0	0	0	18
March	24	139.3	5	32	6	52	7	19	15	0	23	0	147	1	84	5	2	1	0	7	406
April	23	140.3	1	11	56	34	6	113	16	0	0	752	76	0	15	5	0	3	0	20	1108
May	3	17.0	0	0	11	2	0	3	1	0	0	5	10	0	4	0	0	1	0	0	37
Total	57	335.5	6	50	73	90	13	135	32	0	25	757	238	1	105	10	2	5	0	27	1569
Total per hr			0.02	0.15	0.22	0.27	0.04	0.40	0.10	0.00	0.07	2.26	0.71	0.00	0.31	0.03	0.01	0.01	0.00	0.08	4.68
% of flight			0.4	3.2	4.7	5.7	0.8	8.6	2.0	0.0	1.6	48.2	15.2	0.1	6.7	0.6	0.1	0.3	0.0	1.7	100.0
Average last 10 yrs	55.6	331.6	9.2	140.4	60.5	31.1	11.8	80.3	31.8	1.7	25.3	319.9	208.3	0.3	75.8	11.6	3.9	3.5	0.0	36.3	1051.7

DELAWARE NATURE SOCIETY KITE WATCH AT BUCKTOE CREEK PRESERVE (Chester) - Larry Lewis, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
May	15	157.3	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	15
June	6	37.0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	21	194.3	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	16
Total per hr			0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.11
% of flight			0.0	0.0	43.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.3	100.0
Average last 10 yrs																					

HAWK MOUNTAIN (Berks/Schuylkill) - Lansothung Lotha and David Barber, compilers

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
March	3	4.4	0	25	0	1	0	0	0	0	0	0	5	0	0	4	0	0	0	1	36
April	29	179.0	20	75	39	35	4	61	11	0	3	660	45	0	0	8	2	3	0	35	1001
May	11	67.3	2	2	8	4	2	11	1	0	1	20	5	0	0	0	2	0	0	10	68
Total	43.0	250.7	22	102	47	40	6	72	12	0	4	680	55	0	0	12	4	3	0	46	1105
Total per hr			0.08	0.39	0.18	0.15	0.02	0.28	0.05	0.00	0.02	2.62	0.21	0.00	0.00	0.05	0.02	0.01	0.00	0.18	4.25
% of flight			2.0	9.2	4.3	3.6	0.5	6.5	1.1	0.0	0.4	61.5	5.0	0.0	0.0	1.1	0.4	0.3	0.0	4.2	100.0
Average last 10 yrs	42.6	256.0	27.8	55.1	63.5	41.6	21.0	79.0	35.1	0.4	7.6	429.4	81.1	0.1	1.5	23.9	6.0	2.6	0.1	74.3	948.0

JACKS MOUNTAIN (Mifflin) - Darrell Smith, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
March	5	19.5	0	0	0	5	0	2	6	1	5	0	15	0	10	0	0	0	0	0	44
April	4	21.5	0	36	39	2	1	26	10	0	1	547	19	0	3	0	0	1	0	0	685
May	1	3.8	0	0	1	0	0	2	0	0	0	2	1	0	0	0	0	0	0	1	7
Total	10	44.8	0	36	40	7	1	30	16	1	6	549	35	0	13	0	0	1	0	1	736
Total per hr			0.00	0.80	0.89	0.16	0.02	0.67	0.36	0.02	0.13	12.27	0.78	0.00	0.29	0.00	0.00	0.02	0.00	0.02	16.45
% of flight			0.0	4.9	5.4	1.0	0.1	4.1	2.2	0.1	0.8	74.6	4.8	0.0	1.8	0.0	0.0	0.1	0.0	0.1	100.0
Average last 10 yrs																					

PRESQUE ISLE (Erie) - Jerry McWilliams, compiler

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
February	1	2.0	0	2	0	2	2	0	0	0	0	0	3	0	0	0	1	0	0	0	10
March	13	53.0	0	13887	4	23	20	20	14	1	51	0	162	7	0	61	8	3	0	30	14291
April	14	54.0	0	4905	26	25	21	489	9	0	4	891	189	2	0	226	6	3	0	9	6805
May	14	43.5	0	1328	21	90	7	79	0	0	0	497	55	0	1	8	0	1	0	0	2087
Total	42	152.5	0	20122	51	140	50	588	23	1	55	1388	409	9	1	295	15	7	0	39	23193
Total per hr			0.00	131.95	0.33	0.92	0.33	3.86	0.15	0.01	0.36	9.10	2.68	0.06	0.01	1.93	0.10	0.05	0.00	0.26	152.09
% of flight			0.0	86.8	0.2	0.6	0.2	2.5	0.1	0.0	0.2	6.0	1.8	0.0	0.0	1.3	0.1	0.0	0.0	0.2	100.0
Average last 10 yrs	55.3	187.3	1.2	15857.8	81.6	185.0	73.5	811.1	56.7	1.0	182.5	3472.0	520.1	10.6	0.9	308.4	14.6	8.1	0.1	39.9	21619.6

TUSSEY MOUNTAIN (Centre) - Nick Bolgiano and Jon Kauffman, compilers

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total
February	6	36.8	0	31	0	10	2	0	1	0	1	0	2	0	16	0	0	0	0	1	64
March	27	193.3	0	68	5	39	5	22	9	0	20	0	112	0	145	18	4	1	0	18	466
April	22	141.0	0	38	69	28	5	140	10	0	3	1941	66	0	13	23	1	2	0	18	2357
Total	55	371.0	0	137	74	77	12	162	20	0	24	1941	180	0	174	41	5	3	0	37	2887
Total per hr			0.00	0.37	0.20	0.21	0.03	0.44	0.05	0.00	0.06	5.23	0.49	0.00	0.47	0.11	0.01	0.01	0.00	0.10	7.78
% of flight			0.0	4.7	2.6	2.7	0.4	5.6	0.7	0.0	0.8	67.2	6.2	0.0	6.0	1.4	0.2	0.1	0.0	1.3	100.0
Average last 10 yrs	55.1	388.0	10.0	187.3	82.9	65.1	20.1	153.4	25.4	0.6	40.3	857.5	282.2	2.7	175.4	40.4	6.3	2.2	0.0	26.6	1980.2

2018 TOTALS FOR ALL WATCHSITES

Month	Days	Hours	BLVU	TUVU	OSPR	BAEA	NOHA	SSHA	COHA	NOGO	RSHA	BWHA	RTHA	RLHA	GOEA	AMKE	MERL	PEFA	MIKI	Unid	Total**,**
February	14	77.8	0	40	0	14	4	0	1	0	3	0	10	0	18	0	1	0	0	1	92
March	72	409.4	5	14012	15	120	32	63	44	2	99	0	441	8	239	88	14	5	0	56	15243
April	92	535.7	21	5065	229	124	37	829	56	0	11	4791	395	2	31	262	9	12	0	82	11956
May	44	288.8	2	1330	47	96	9	95	2	0	1	524	71	0	5	8	2	2	9	11	2214
May	6	37.0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	228	1348.7	28	20447	292	354	82	987	103	2	114	5315	917	10	293	358	26	19	9	150	29506
Total per hr.			0.02	15.06	0.22	0.26	0.06	0.73	0.08	0.00	0.08	3.91	0.68	0.01	0.22	0.26	0.02	0.01	0.01	0.11	21.73
% of flight			0.1	95.3	1.4	1.7	0.4	4.6	0.5	0.0	0.5	24.8	4.3	0.0	1.4	1.7	0.1	0.1	0.0	0.7	137.5
Average last 10 yrs.	240.9	1378.1	82.1	16439.2	335.4	351.5	135.3	#####	171.0	4.0	266.9	5339.9	#####	13.7	253.9	398.8	33.4	16.7	3.1	181.6	26347.8